

CLAIMS

WHAT IS CLAIMED IS:

1. A package comprising:
a substrate;
5 an electronic component coupled to said substrate,
said electronic component comprising:
an active area; and
an active calibration area; and
a sensor coupled to said substrate, said sensor
10 comprising a sensor area aligned with said active
calibration area.
2. The package of Claim 1 further comprising a
window coupled to said substrate, said active calibration
15 area being position adjacent a first surface of said
window directly opposite of a position of said sensor area
adjacent a second surface of said window.
3. The package of Claim 2 wherein said electronic
20 component is located within a pocket of said substrate,
said window sealing said pocket.
4. The package of Claim 3 wherein said window is
coupled to said substrate by an adhesive.
25
5. The package of Claim 4 wherein said electronic
component is within a cavity defined by said window, said
adhesive and said pocket.
6. The package of Claim 3 wherein said pocket is
30 defined by a base and a pocket sidewall, said package
further comprising a ground plane coupled to said base.

202504060

0940103-0004

7. The package of Claim 6 wherein said electronic component comprises:

a first surface comprising said active area and said active calibration area; and

5 a second surface coupled to said ground plane and thereby coupled to said substrate.

8. The package of Claim 6 further comprising a ground pad coupled to said substrate, said ground plane being electrically coupled to said ground pad.

9. The package of Claim 1 wherein said electronic component is a vertical cavity surface emitting laser (VCSEL) device.

15 10. The package of Claim 9 wherein said active area is a first vertical cavity surface emitting laser and wherein said active calibration area is a second vertical cavity surface emitting laser.

20 11. The package of Claim 1 wherein said sensor comprises a photodiode.

25 12. A package comprising:
a substrate;
an electronic component coupled to said substrate, said electronic component comprising:
an active area; and
an active calibration area;
30 a sensor comprising:
a sensor area aligned with said active calibration area; and
a terminal;
a surface mount pad coupled to said substrate; and

a mounting joint coupling said terminal to said surface mount pad.

13. The package of Claim 12 wherein said mounting joint comprises solder.

14. The package of Claim 12 further comprising a sensor pad coupled to a lower surface of said substrate, said sensor pad being electrically coupled to said surface mount pad.

15. The package of Claim 14 further comprising a sensor via, said sensor pad being electrically coupled to said surface mount pad by said sensor via.

16. The package of Claim 14 further comprising:
an upper sensor via;
a lower sensor via; and
an interlayer sensor trace, said sensor pad being electrically coupled to said surface mount pad by said upper sensor via, said lower sensor via, and said interlayer sensor trace.

17. The package of Claim 16 wherein said upper sensor via extends between said surface mount pad and said interlayer sensor trace and wherein said lower sensor via extends between said interlayer sensor trace and said sensor pad.

18. The package of Claim 12 further comprising a window coupled to said substrate, said active calibration area being position adjacent a first surface of said window directly opposite of a position of said sensor area adjacent a second surface of said window.

2025 RELEASE UNDER E.O. 14176

19. The package of Claim 12 wherein said electronic component is a vertical cavity surface emitting laser (VCSEL) device.

5

20. The package of Claim 19 wherein said active area is a first vertical cavity surface emitting laser and wherein said active calibration area is a second vertical cavity surface emitting laser.

10

21. The package of Claim 12 wherein said sensor comprises a photodiode.

22. A package comprising:

15

a substrate;

an electronic component coupled to said substrate, said electronic component comprising:

a means for emitting a first electromagnetic radiation; and

20

a means for emitting a second electromagnetic radiation; and

a means for sensing said second electromagnetic radiation coupled to said substrate, said means for sensing comprising a sensor area aligned with said means for emitting a second electromagnetic radiation.

25

23. The package of Claim 22 further comprising a means for coupling said means for sensing to said substrate.

30

24. The package of Claim 22 wherein said electronic component is located within a pocket of said substrate, said package further comprising a means for sealing said pocket.

202507041650

TOP SECRET

25. The package of Claim 24 wherein said means for sealing is transparent to said first electromagnetic radiation and to said second electromagnetic radiation.

5

26. The package of Claim 22 wherein said first electromagnetic radiation is the same as said second electromagnetic radiation.

10

27. A method comprising:

coupling an electronic component within a pocket of a substrate, said electronic component comprising:

an active area; and
an active calibration area;

15

forming bond wires between bond pads of said electronic component and traces coupled to said substrate; coupling a window to said substrate to seal said pocket; and

20

coupling a sensor to said substrate such that a sensor area of said sensor is aligned with said active calibration area.

25

28. The method of Claim 27 further comprising:
emitting a first electromagnetic radiation with said active area; and
emitting a second electromagnetic radiation with said active calibration area.

30

29. The method of Claim 28 wherein said window is transparent to said first electromagnetic radiation and to said second electromagnetic radiation.

30. The method of Claim 28 wherein said second electromagnetic radiation is measured by said sensor.

31. The method of Claim 28 wherein said first electromagnetic radiation is the same as said second electromagnetic radiation.

5

32. The method of Claim 27 wherein said electronic component is a vertical cavity surface emitting laser (VCSEL) device.

10

33. The method of Claim 32 wherein said active area is a first vertical cavity surface emitting laser and wherein said active calibration area is a second vertical cavity surface emitting laser.

15

34. The method of Claim 27 wherein said sensor comprises a photodiode.

20

35. The method of Claim 27 wherein said coupling a sensor to said substrate comprises forming a mounting joint between a surface mount pad coupled to said substrate and a terminal of said sensor.

25

36. The method of Claim 35 wherein said forming a mounting joint comprises screening solder paste and reflowing said solder paste to form said mounting joint.